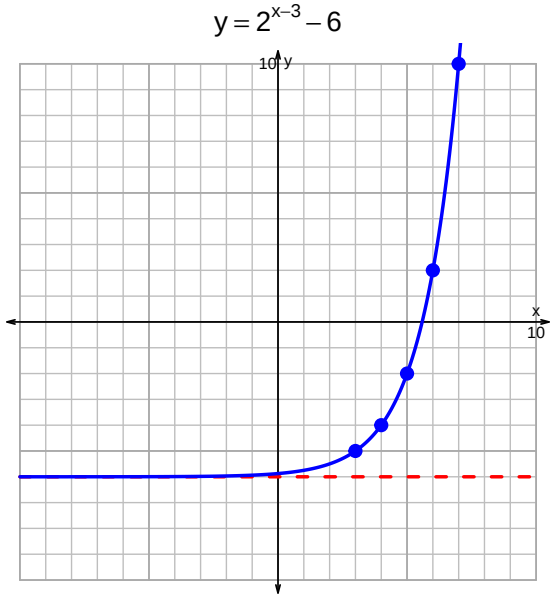
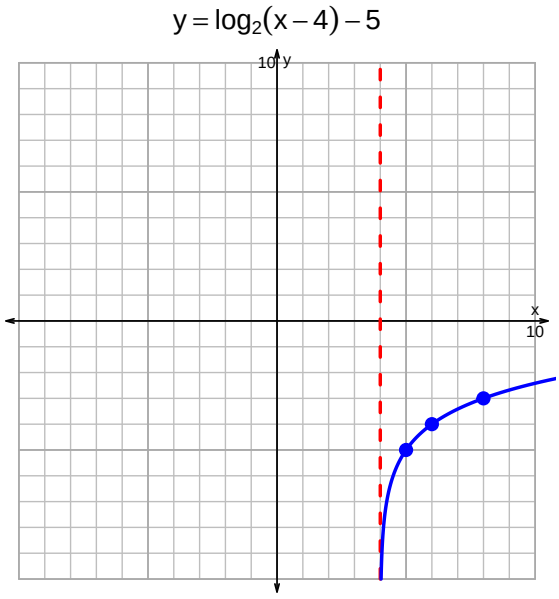
Name: Date:

## S18QUIZ: EXP LOG (SLTN v223)

1. Graph $y = 2^{x-3} - 6$ and $y = \log_2(x-4) - 5$ on the grids below. Also, draw any asymptotes with dotted lines.




2. Write (but do not evaluate) the solution to the equation below by writing a logarithmic expression.

$$19 = \left(\frac{4}{3}\right) \cdot 10^{5t/7}$$

Divide both sides by $\frac{4}{3}$.

$$\frac{19 \cdot 3}{4} = 10^{5t/7}$$

Take log, base 10, of both sides.

$$\log_{10}\left(\frac{19 \cdot 3}{4}\right) = \frac{5t}{7}$$

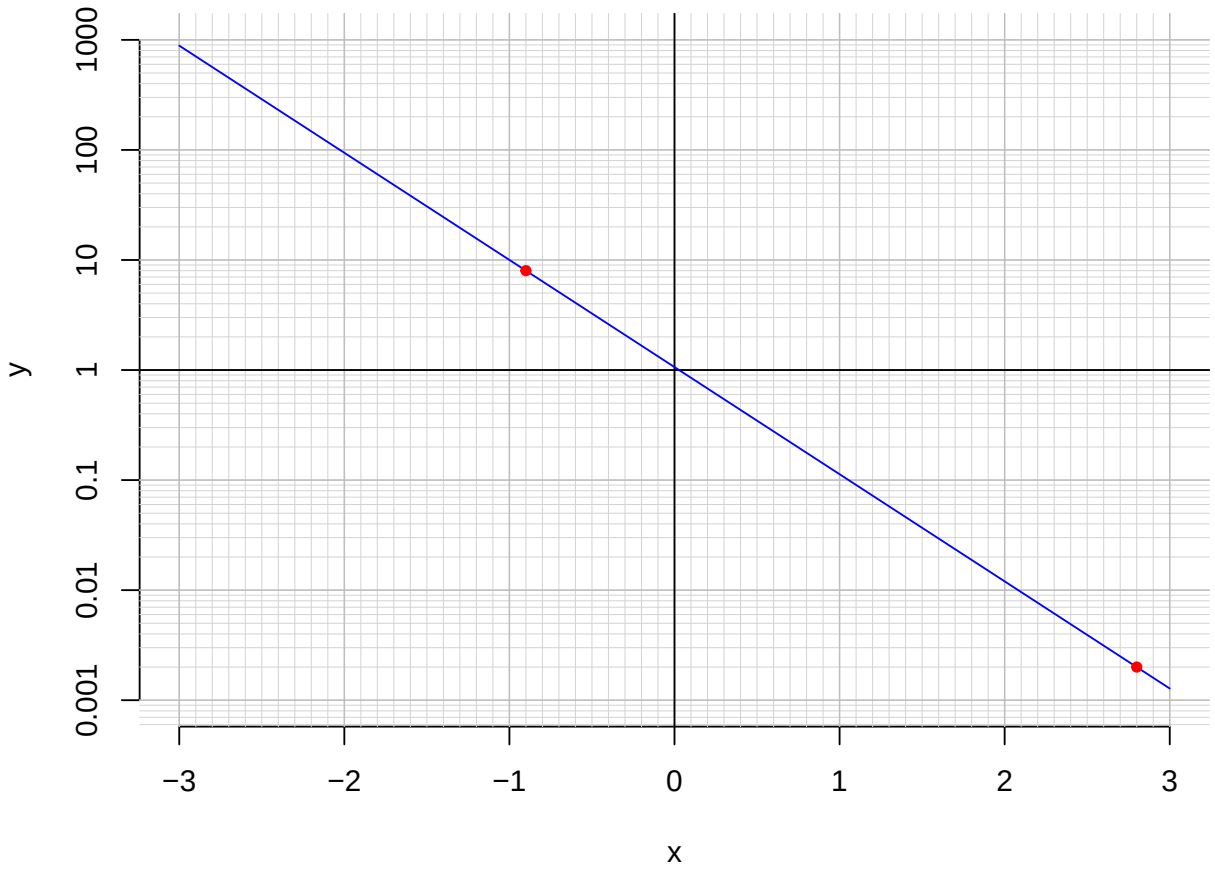
Divide both sides by $\frac{5}{7}$.

$$\frac{7}{5} \cdot \log_{10}\left(\frac{19 \cdot 3}{4}\right) = t$$

Switch sides.

$$t = \frac{7}{5} \cdot \log_{10}\left(\frac{19 \cdot 3}{4}\right)$$

3. An exponential function $f(x) = 1.06 \cdot e^{-2.24x}$ is graphed below on a semi-log plot.




a. Using the plot above, evaluate $f(-0.9)$.

$$f(-0.9) = 8$$

b. Express $f^{-1}(x)$, the inverse of $f$.

$$f^{-1}(x) = \frac{-1}{2.24} \cdot \ln\left(\frac{x}{1.06}\right)$$

c. Using the plot above, evaluate $f^{-1}(0.002)$.

$$f^{-1}(0.002) = 2.8$$